Magnetic Resonance in Solids, 2016, vol.18, N2

EMR searching of quantum behavior of magnetic γ-Fe2O3 nanoparticles encapsulated into poly(Propylene imine) dendrimer

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Abstract

© Kazan Federal University (KFU).The superparamagnetic γ-Fe2O3 nanoparticles (average diameter of 2.5 nm) encapsulated in poly(propylene imine) dendrimer have been investigated by electron magnetic resonance (EMR). EMR measurements have been recorded in perpendicular and parallel configurations in the wide temperature range (4.2-300 K). It has been shown that the model based on the spin value S = 30, corresponding to the total magnetic moment of the nanoparticle, can be used to interpret the experimental results and the proof of the quantum behavior of γ-Fe2O3 nanoparticles.

Keywords

Dendrimers, ESR/EPR, Iron oxide nanoparticles, Magnetism, Quantum behavior